

WHAT IS CLAIMED IS:

1. An method of detecting a pattern in a pattern detecting apparatus, the apparatus comprising a table for fixing a substrate having a formed wiring pattern and an alignment mark, an imaging unit which images a predetermined point in said substrate, a signal processing unit which processes a video signal send by said imaging unit and a control unit which controls the action of said table, the method comprising steps of:

imaging a first alignment mark as a reference by said imaging unit;

registering a substantially whole alignment mark in said imaged first alignment mark and a part of alignment mark in said imaged first alignment mark;

imaging a second alignment mark in said substrate to be inspected by said imaging unit; and

detecting a position of said second mark from said imaged second alignment mark, based on any of said substantially whole alignment mark or at least a part of said imaged first alignment mark.

2. The method of detecting a pattern according to the claim 1, further comprising:

imaging a third alignment mark which position is different from said first alignment mark, as a reference, imaged by said imaging unit; and

registering a substantially whole alignment mark in said third imaged alignment mark and a part of said third image alignment mark.

3. The method of detecting a pattern according to the claim 2, further comprising:

by said imaging unit, imaging a fourth alignment mark which position is different from said second alignment mark;

detecting a position of said fourth alignment mark from said imaged fourth alignment mark based on any of a substantially whole alignment mark in said imaged third alignment mark or at least a part of said imaged third alignment mark.

4. The method of detecting a pattern according to the claim 3,

wherein said signal processing unit calculates an offset and a gradient to be measured, based on a result of said position detection in said second and said fourth alignment mark, and corrects said positions of said second and said fourth alignment mark, based on said offset and said gradient.

5. The method of detecting a pattern according to the claim 1,

wherein, in said detecting step, said signal processing unit outputs an error information if said second alignment mark is not detected from any images of said first alignment marks.

6. The method of detecting a pattern according to the claim 1,

wherein said detecting is performed by using of a gray scale pattern matching.

7. The method of detecting a pattern according to claim 1,

wherein said imaging unit further comprises a first optical system and a second optical system, said each optical system has a different magnification, respectively, said wiring pattern is imaged by said second optical system.

8. An apparatus which detects a pattern comprises:

a table which fixes a substrate which includes an alignment mark, a wiring pattern being formed on said substrate;

an imaging unit which images a predetermined position on said substrate;

a storage unit which stores an video data;  
and

a control unit which adjusts a range of view to be imaged by said imaging unit so as to a predetermined position in said substrate fixed on said table,

wherein said imaging unit images a first alignment mark, as a reference, imaged by said imaging unit and a second alignment mark to be measured and registers substantially whole alignment mark of said imaged first alignment mark to said storage unit and a part of alignment mark in said first alignment mark;  
and

wherein said signal processing unit has a

function for detecting a position of said second alignment mark from said imaged second alignment mark based on any of a substantially whole alignment mark of said registered first alignment mark or at least a part of said imaged first alignment mark.

9. The apparatus which detects the pattern according to the claim 8,

wherein said control unit which adjusts said range of view moves said substrate as a reference;

wherein said imaging unit has a function for imaging a third alignment mark which is different from said first alignment mark as a reference; and

wherein said substantially whole alignment mark of said imaged third alignment mark and a part of said imaged third alignment mark are registered.

10. The apparatus which detects a pattern according to the claim 9,

wherein said imaging unit has a function for imaging a fourth alignment mark which is different from said second alignment mark to be measured; and

wherein said signal processing unit has a function for detecting a position of said fourth alignment mark from said fourth alignment mark, based on a substantially whole alignment mark of said third alignment mark registered by said storage unit and at least a part of said imaged third alignment mark.

11. The apparatus which detects a pattern according to the claim 10,

wherein said signal processing unit calculates an offset and a gradient to be measured, based on a result of said position detection in said second and said fourth alignment mark, and corrects positions of said second and said fourth alignment mark, based on said offset and said gradient.

12. The apparatus which detects a pattern according to the claim 8,

wherein, in the case of detecting a position of said second mark from said imaged second alignment mark, based on any of said substantially whole alignment mark or at least a part of said imaged first alignment mark, said signal processing unit outputs an error information if said second alignment mark is not detected from any of said first alignment marks.

13. The apparatus which detects a pattern according to the claim 8,

wherein, in the case of detecting a position of said second mark from said imaged second alignment mark, based on any of said substantially whole alignment mark or at least a part of said imaged first alignment mark, said detecting is performed by using of a gray scale pattern matching.

14. The apparatus which detects a pattern according to the claim 8,

wherein said imaging unit further comprises a first optical system and a second optical system, said each optical system has a different magnification,

respectively, said wiring pattern is imaged by said second optical system.

15. The apparatus which detects a pattern according to the claim 8,

wherein a magnification of said second optical system is larger than a magnification of said first optical system.